# Effect of chrysin omega-3 and 6 fatty acid esters on mushroom tyrosinase activity, stability, and structure

Zohreh Jamali
Gholamreza Rezaei Behbehani
Karim Zare
Nematollah Gheibi
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## Abstract

The estreification of chrysin with α-Linolenic acid (complex I) and linoleic acid (complex II) poly unsaturated fatty acids resulted to design of new mushroom tyrosinase (MT) inhibitors. Thermodynamic parameters of enzymes, including the melting point ($T_m$) and $\Delta G$ values, were obtained from thermal and chemical denaturation curves. Complexes I and II showed a competitive inhibitory effect on MT with $K_i$ values of 0.45 and 0.29 mM, respectively. The $T_m$ values were calculated as 328.6, 322.4, and 318 K and the $\Delta G$ values as 62.8, 52.9, and 47.1 KJ $mol^{-1}$ for the enzyme alone and its interaction with complexes I and II, respectively. Intrinsic and extrinsic fluorescence techniques showed structural instability of the enzyme in concomitance with a decrease in the regular secondary structure acquired using CD spectrometry. This data clearly prove that the new derivatives show a stronger inhibitory effect than the separate compounds. Molecular docking analysis showed that the best possible interaction condition was achieved for chrysin with n-6.